

Fig. 16

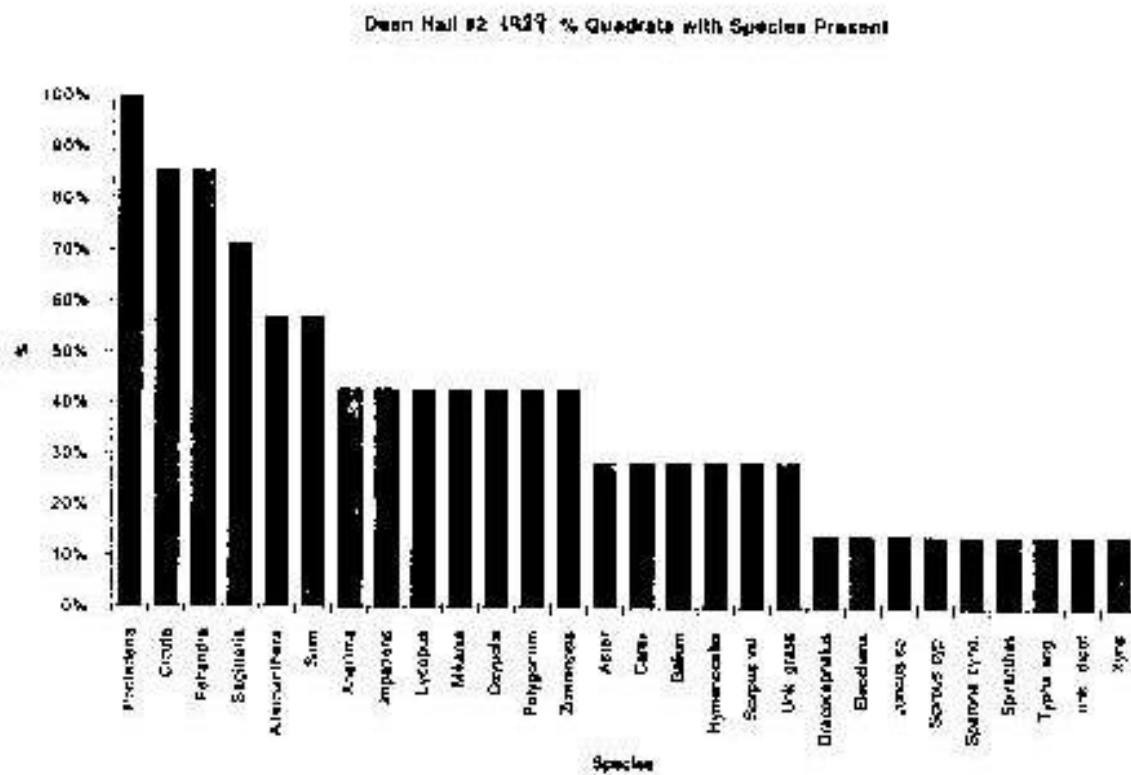


Fig. 17

Dean Hall #2 Mean July Biomass of Top Ten Species - 1992

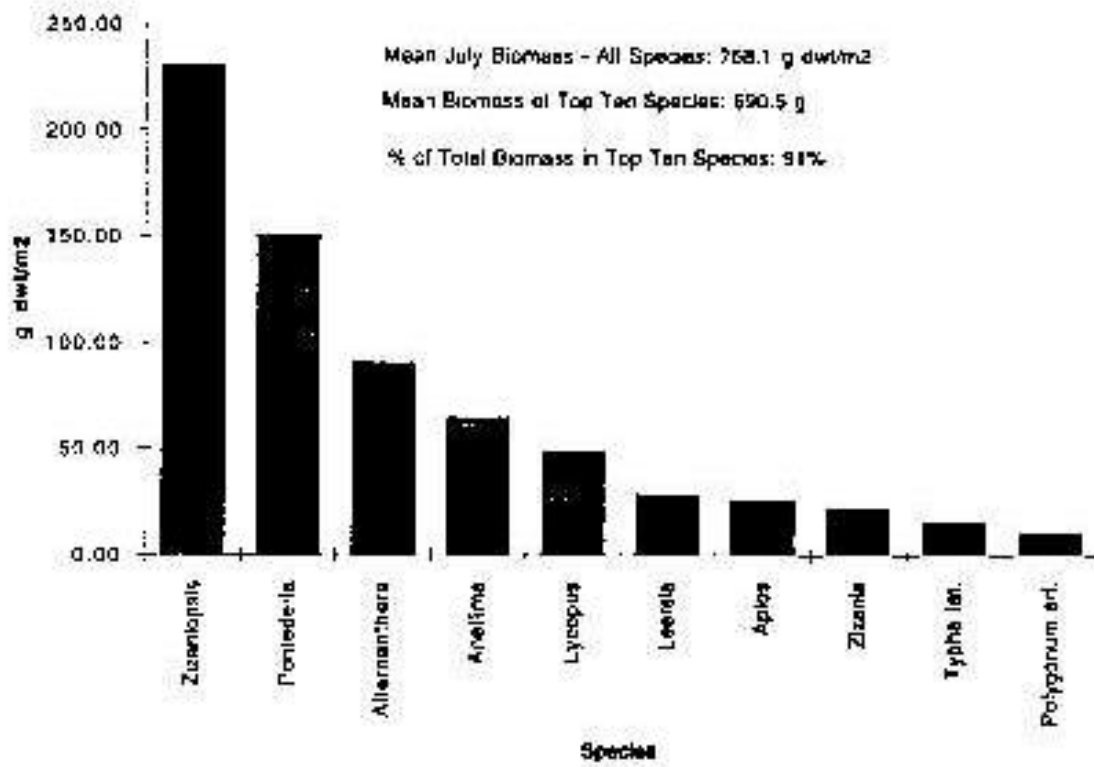


Fig. 18

Dean Hall #2 1989 Mean March Biomass of Top Ten Species

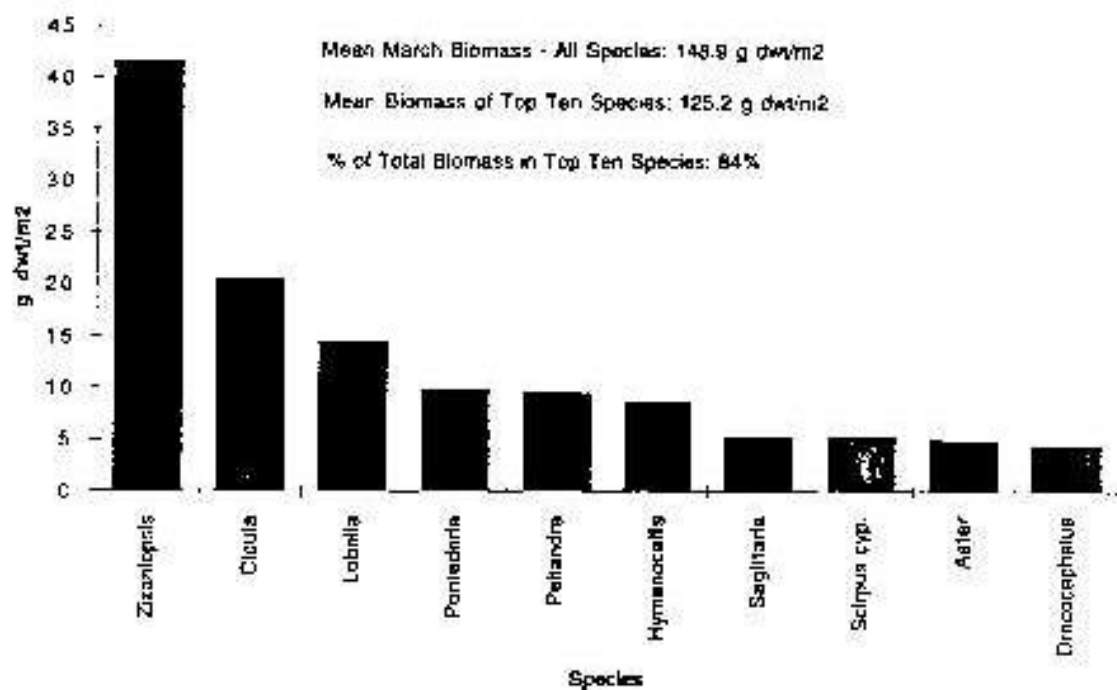


Fig. 19

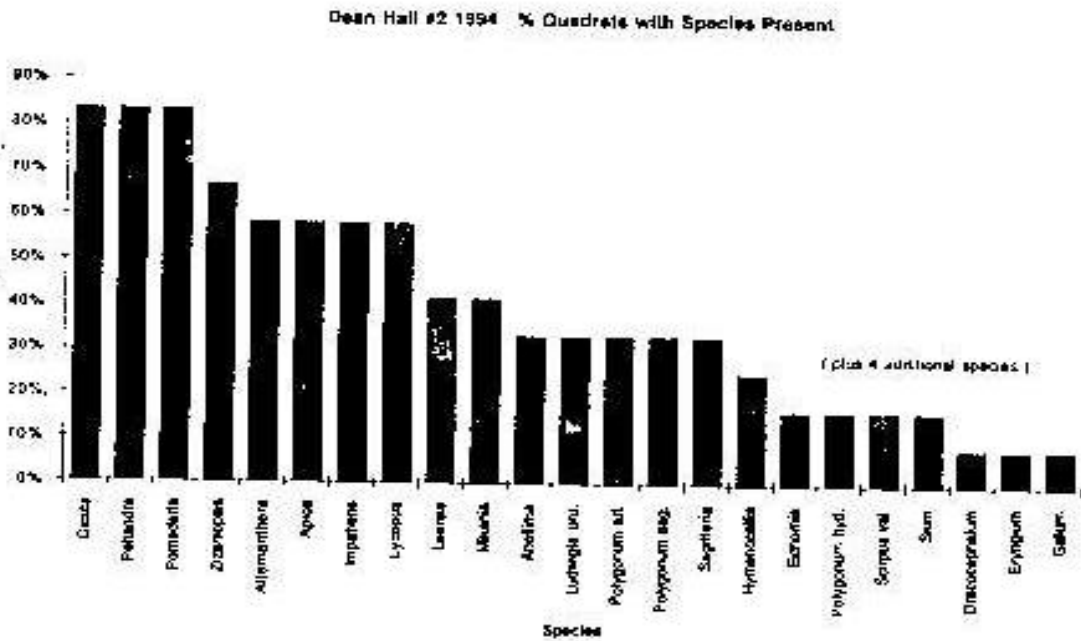
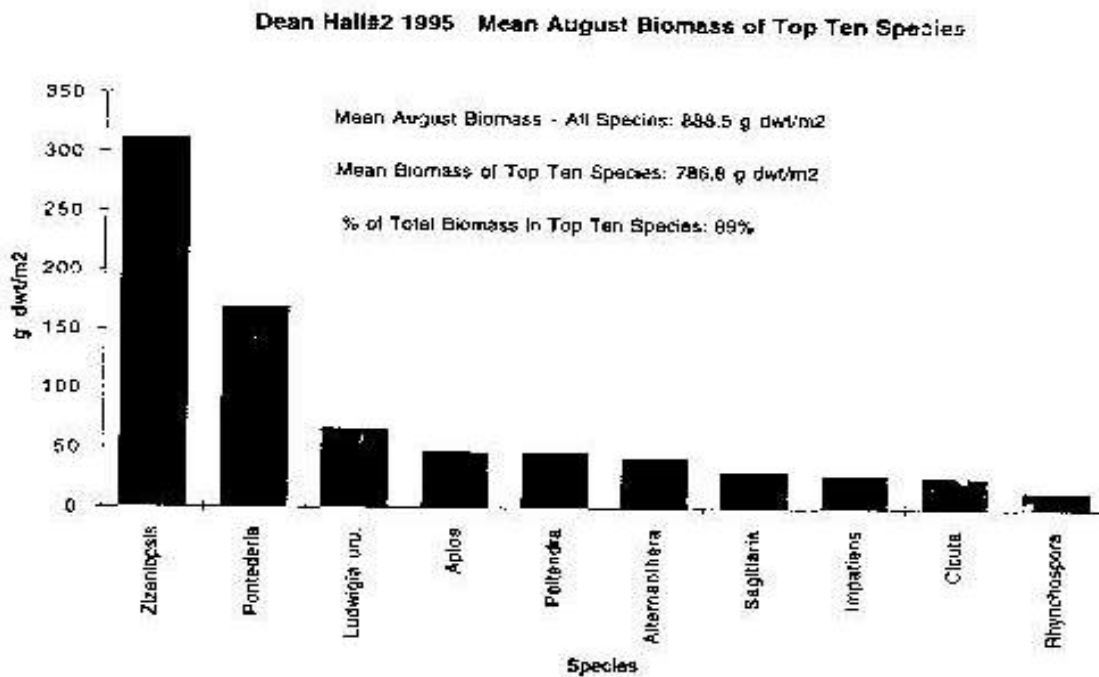


Fig. 20



Quinby

An especially high quality, low level 1977 aerial photo allowed us to get a good level of resolution in our Quinby classification shown in Figure 21. In 1977 Quinby had almost complete cover with emergent intertidal communities. We chose Quinby to represent a more advanced successional stage than Dean Hall but one still dominated by grasses and sedges. Most interior ditches were blocked with *Ludwigia*, closing the interior to boat traffic. A few scattered trees; e.g., *Acer rubrum*, not more than 3 feet tall, were present. The distribution of emergent communities in relation to elevation is apparent in Figure 21. Lowest areas in ditches support *Ludwigia*. Moving up ditch banks, *Pontederia* and *Cicuta*. Next higher *Pontederia/Scirpus americanus* followed by a switch in proportions to *S. americanus/Pontederia*. Most of the inter-ditch area at Quinby was occupied by *S. americanus/Aneilma*. In some slightly higher areas there were patches of

Fig. 21 Quinby Winter 1977



□ unclassified Cladium S. amer./Anellima S. amer./Pontederia Pontederia/S. amer.
 Ludwigia Tree Water Pontederia/Cicuta S. cyno./Kosteletskyia

Community	Area (m2)	% Cover
Cladium	4328	2.6
Ludwigia	9745	5.8
Pontederia/Cicuta	19741	11.7
Pontederia/S. amer.	5991	3.6
S. amer./Anellima	63083	37.5
S. amer./Pontederia	16957	10.1
S. cyno./Kosteletskyia	8412	5
Tree	5858	3.4

Spartina cynosuroides /*Kosteletskyia*. Compared to Dean Hall and Dean Hall #2, 1982 Quinby ground data shows species abundance was high (figs. 22 & 23). Concentration of biomass in the top ten species (fig. 24) is not as high at Quinby as at Dean Hall and Dean Hall#2.

Fig. 22

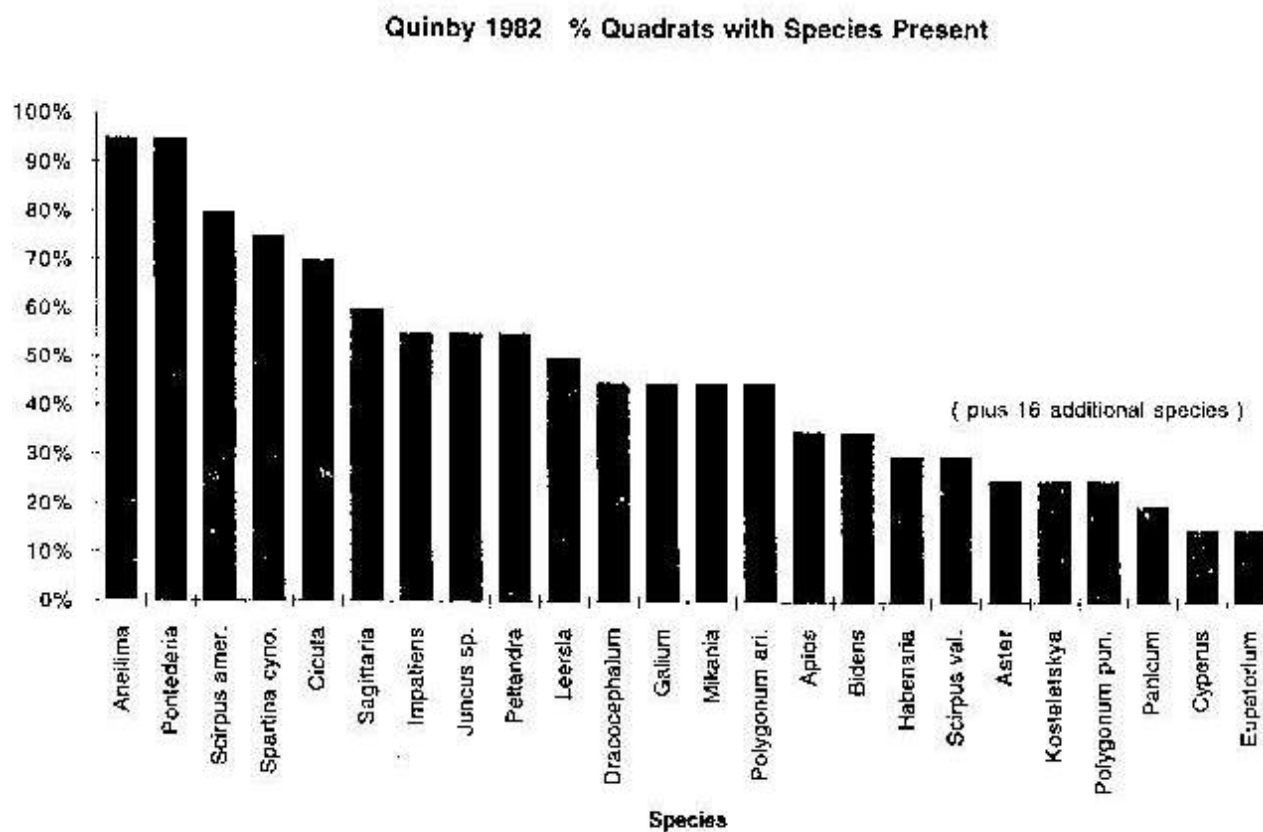


Fig. 23

Changes of Numbers of Species Present in Quadrats Over Time

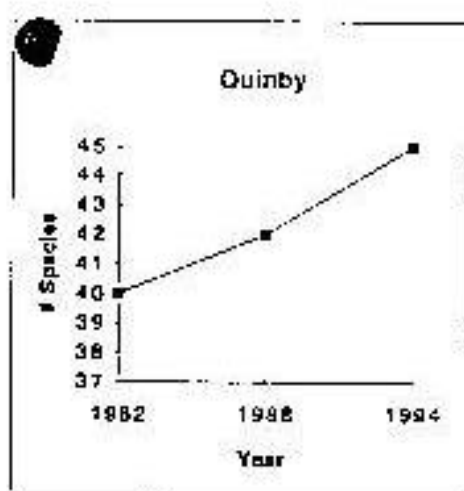
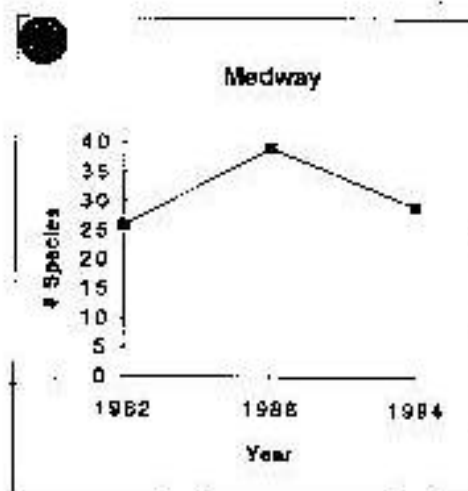
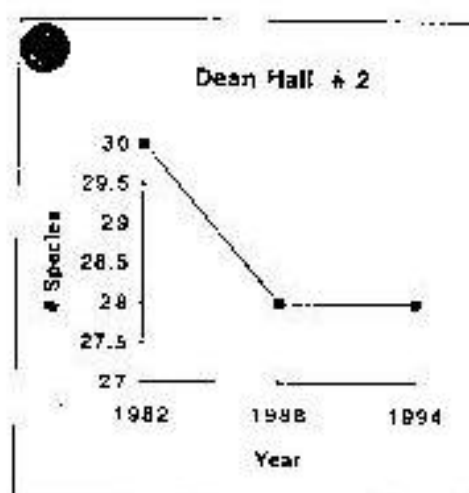
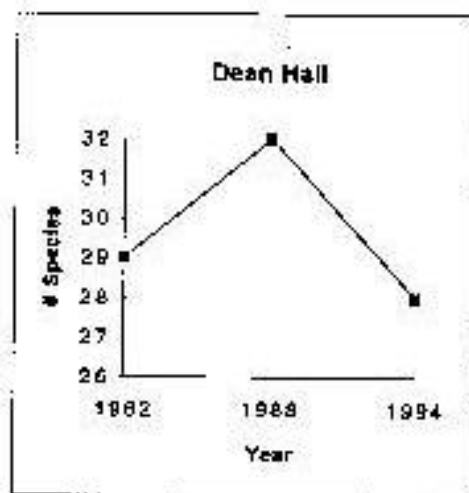
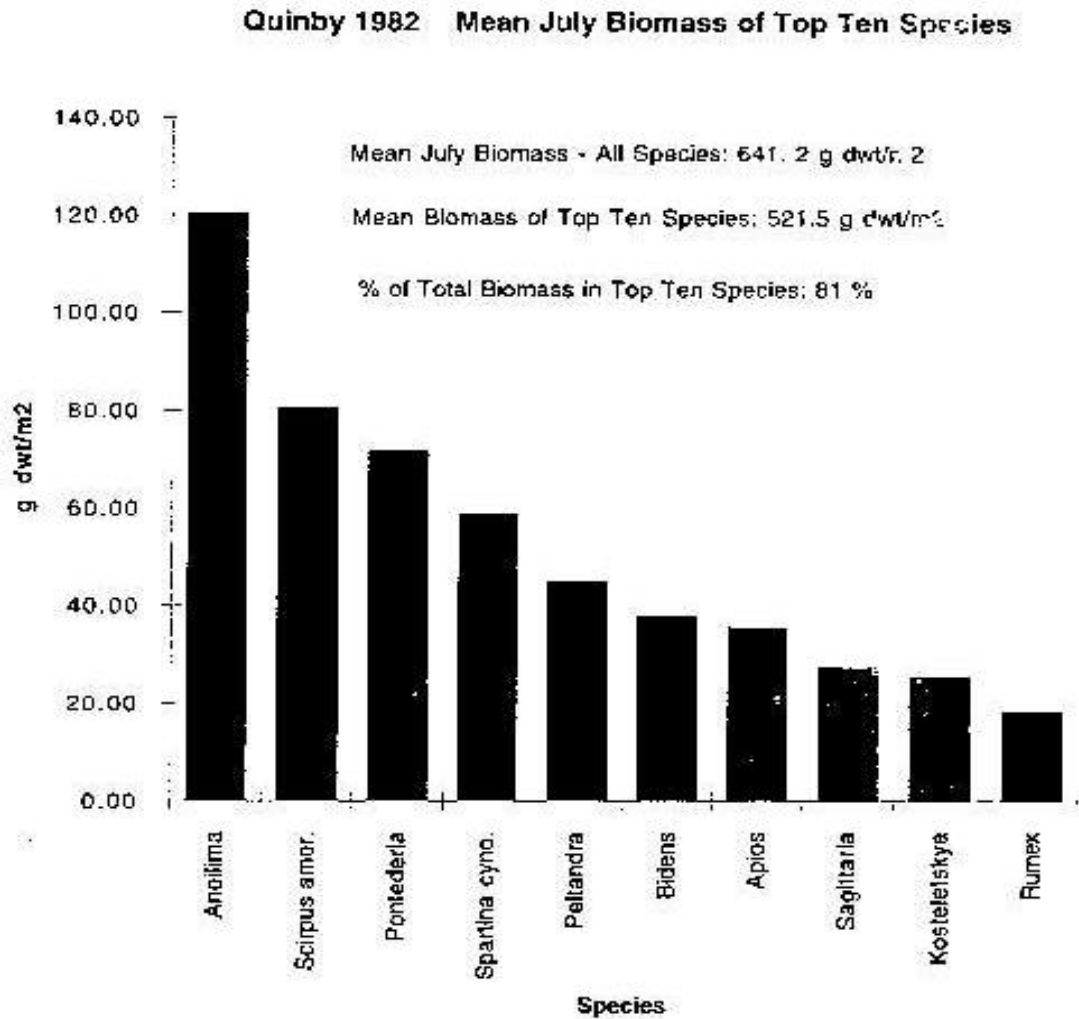
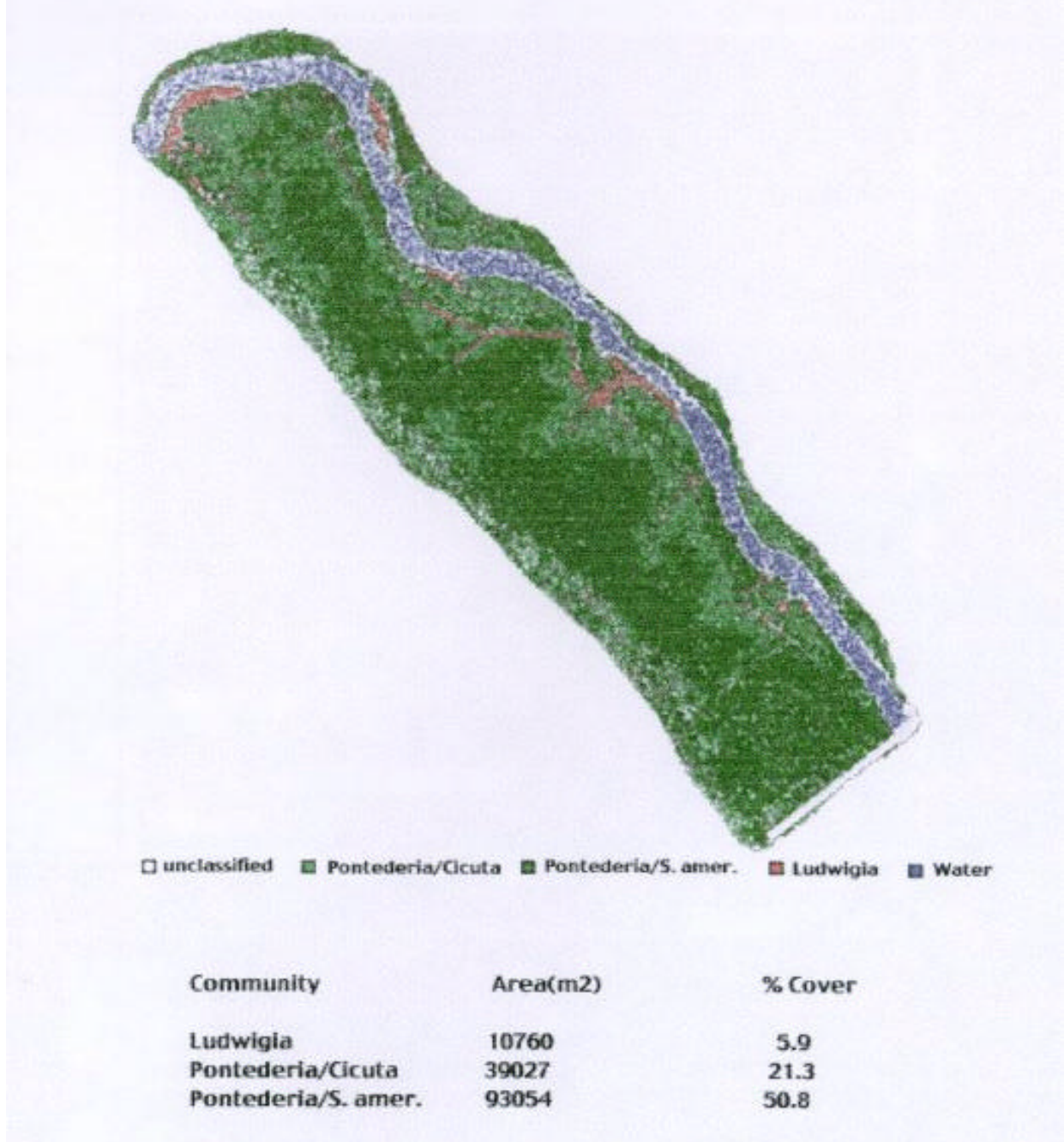


Fig. 24



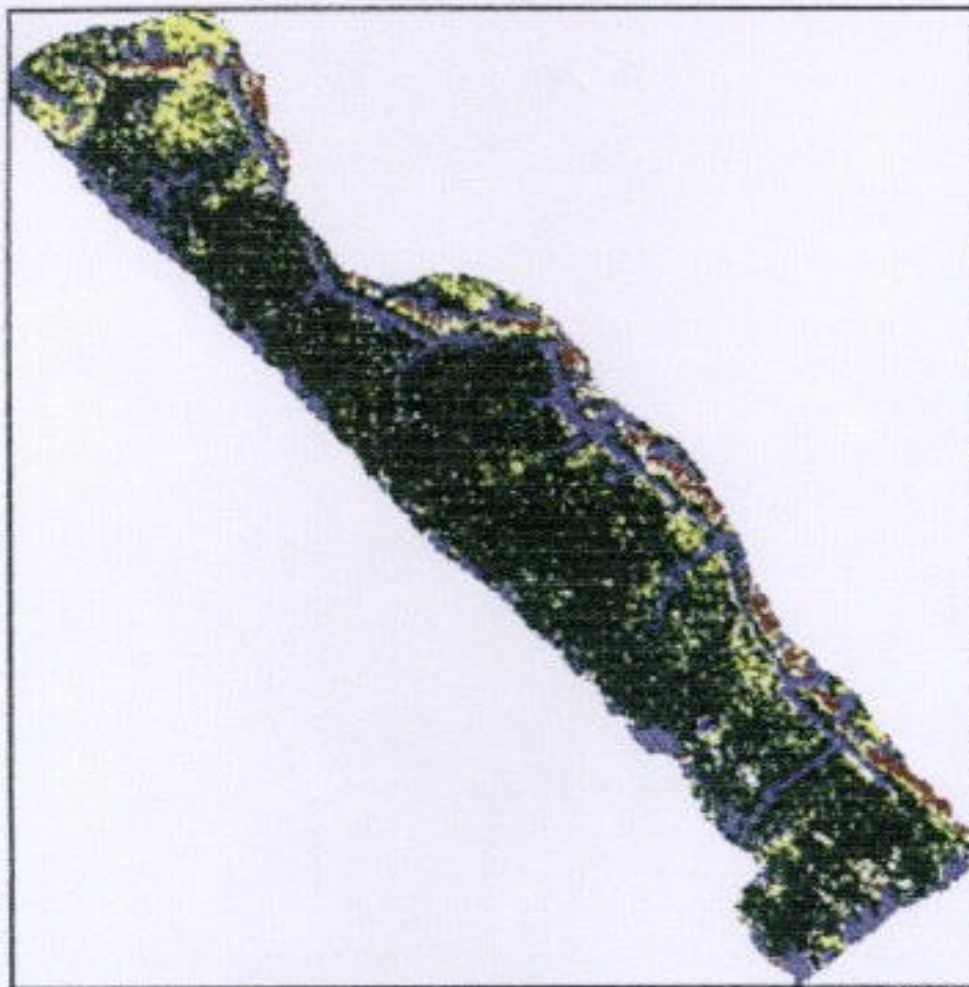
The spring 1982 classification (fig. 25) shows that *Ludwigia* is confined largely to ditches and that broad leaf perennials, *Pontederia* and *Cicuta*, dominate in spring as they do in lower successional stages. Summer 1982 species frequency and biomass data show differences in dominant species as compared to Dean Hall and intertidal portions of Dean Hall #2: notably the absence of *Zizaniopsis* and the greater importance of *Aneilima* and *Spartina cynosuroides*.

Fig. 25 Quinby Spring 1982



By 1989 the *S. americana*/Pontederia had expanded to 34.5% (fig. 26) and tree cover to 17.3%. Trees that were less than 3 feet in 1977 had in some cases exceeded 10 feet. Species abundance remained high (figs. 23 & 27) and biomass was less concentrated in the top ten species (fig. 28).

Fig. 26 Quinby Winter 1989



☐ Unclassified
☐ Tree

☐ Clad/S.cyno
☐ Water/Shadow

☐ ITEM

Community

Area(m²)

% Cover

Cladium/S. cyno.

14345

7.8

ITEM

81390

44.5

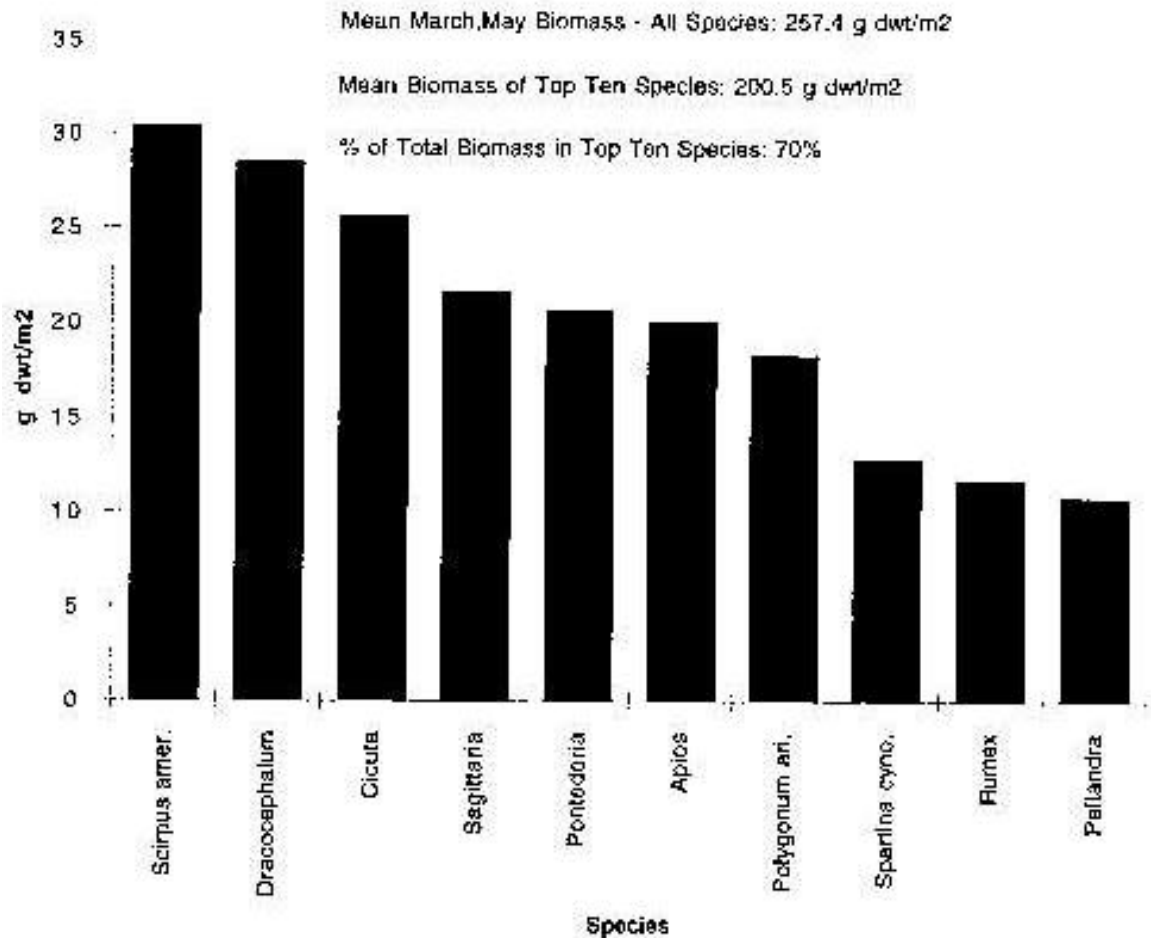
Tree

31743

17.3

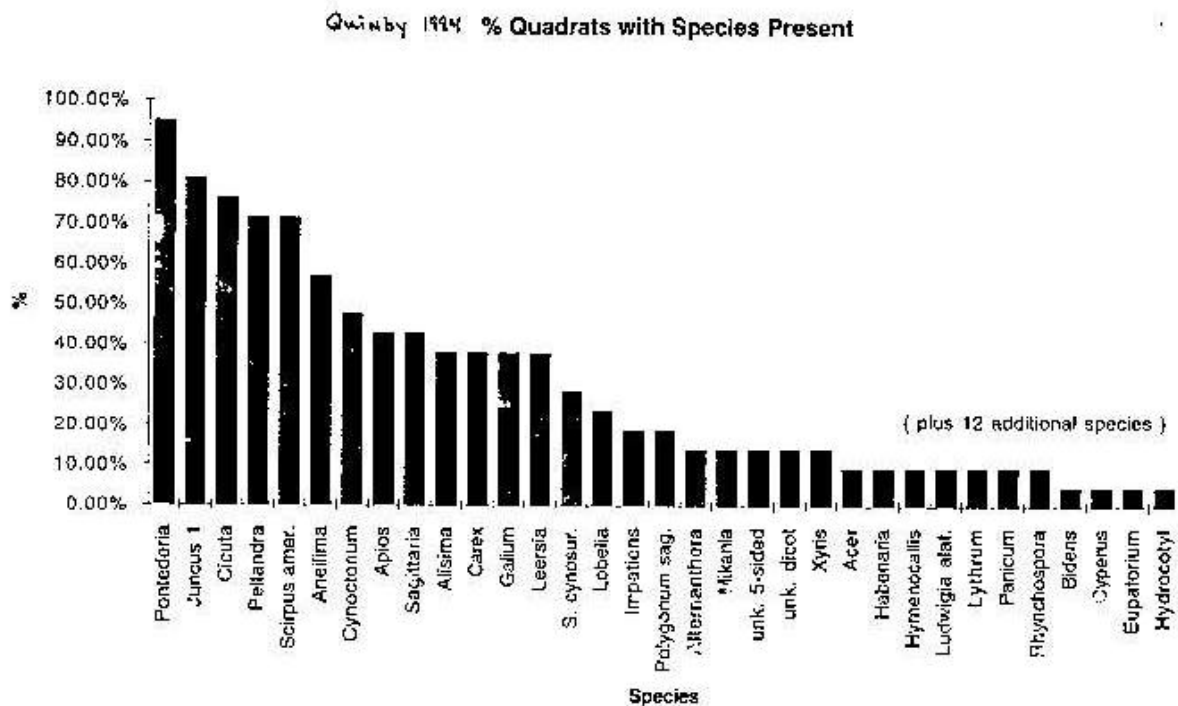
Figure 27

Quinby 1989 Mean March, May Biomass of Top Ten Species



1994 color IR photography was of poor quality and didn't allow classification. 1994 ground data (figs. 28, 29 & 30) and oblique color slide photography showed the persistence of the *S. americana* dominated inter-ditch areas and clear increase in tree cover in the southwestern end of the field. Species abundance was high and the field had the appearance of a terrestrial old field even though soils remained saturated at all tides in 1994. On the ground observation and low level color slide photography show numerous deer, rabbit and other small animal trails throughout the *S. americana* dominated areas of the field. These trails are not evident in the intertidal areas of Dean Hall and Dean

Fig. 28



Medway

In 1977 we chose Medway to represent advanced successional stages since numerous small trees were present, scattered throughout the field. At Medway these were predominately willows (*Salix* sp.) and red maples (*Acer rubrum*) although other late stage Cooper fields sometimes contained sea myrtle (*Baccharis*), wax myrtle (*Myrica*) and pond gum (*Nyssa*). Medway was different from the other three fields we followed in that large, deep interior ditches had been overgrown by *Typha* which formed thick rootmats that other plants, including trees, used as soil. Almost any transect leading from the river to high land passes across one these areas, which bounce and shake as they are crossed. A paddle pushed into the rootmat breaks through to water after penetrating 12 -18 inches. Other such situations are common along the Cooper system and create a side branch in the succession pattern typical of

flatter areas.

Fig. 29

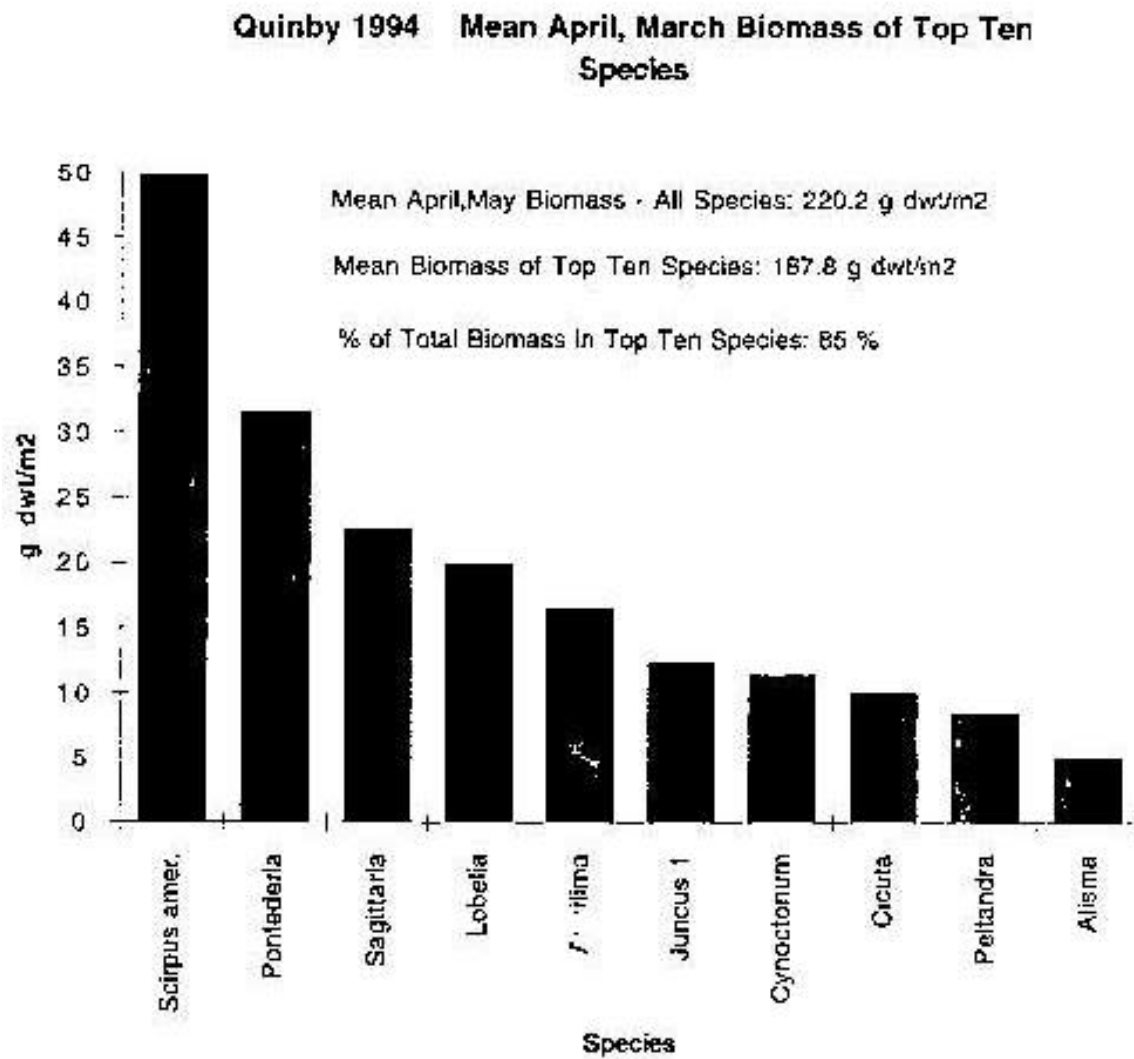
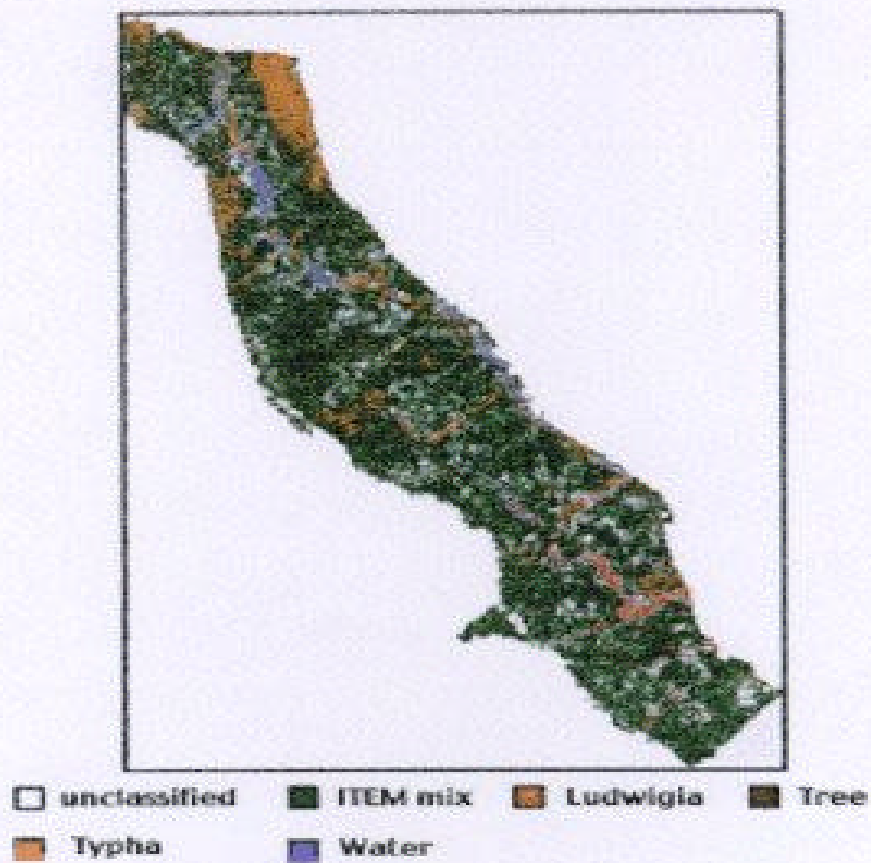


Fig. 30 Medway Winter 1977

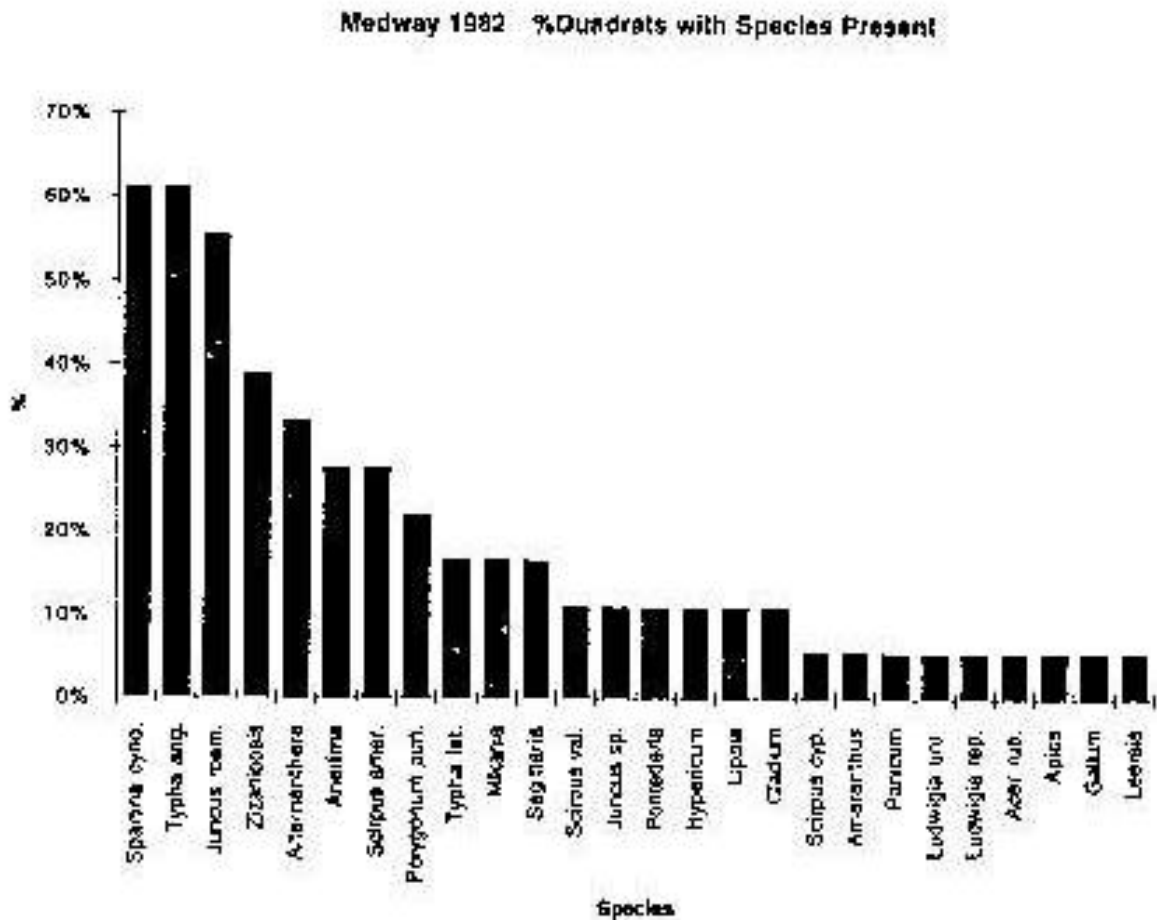


Community	Area(m2)	% Cover
ITEM mix	73930	17.6
Ludwigia	2199	.5
Typha	15321	3.6
Tree	291	.05

Figure 31 is a classification of Medway from 1977 aerial photography using field maps and notes as verifiers. Open water, Typha and Ludwigia covered areas have become the quaking earth areas mentioned above. Although trees were widely present, they were small and scattered making

them hard to detected in the aerial photography. The predominant cover was an ITEM community with many of the same species found in the Dean Hall and Dean Hall #2 ITEM community but with different dominants; e.g., more *Spartina cynosuroides* and *Typha angustifolia*.

Fig. 31



1982 photography was unavailable and July 1982 ground data (figs. 32 & 33) shows little change since 1977. 1989 spring ground data (figs. 34 & 35) show a field dominated by tall grasses and low understory instead of broad leaf perennials as in Dean Hall, Dean Hall #2 and Quinby.

Pontederia, a strong dominant in the other three fields is present but rare at Medway.

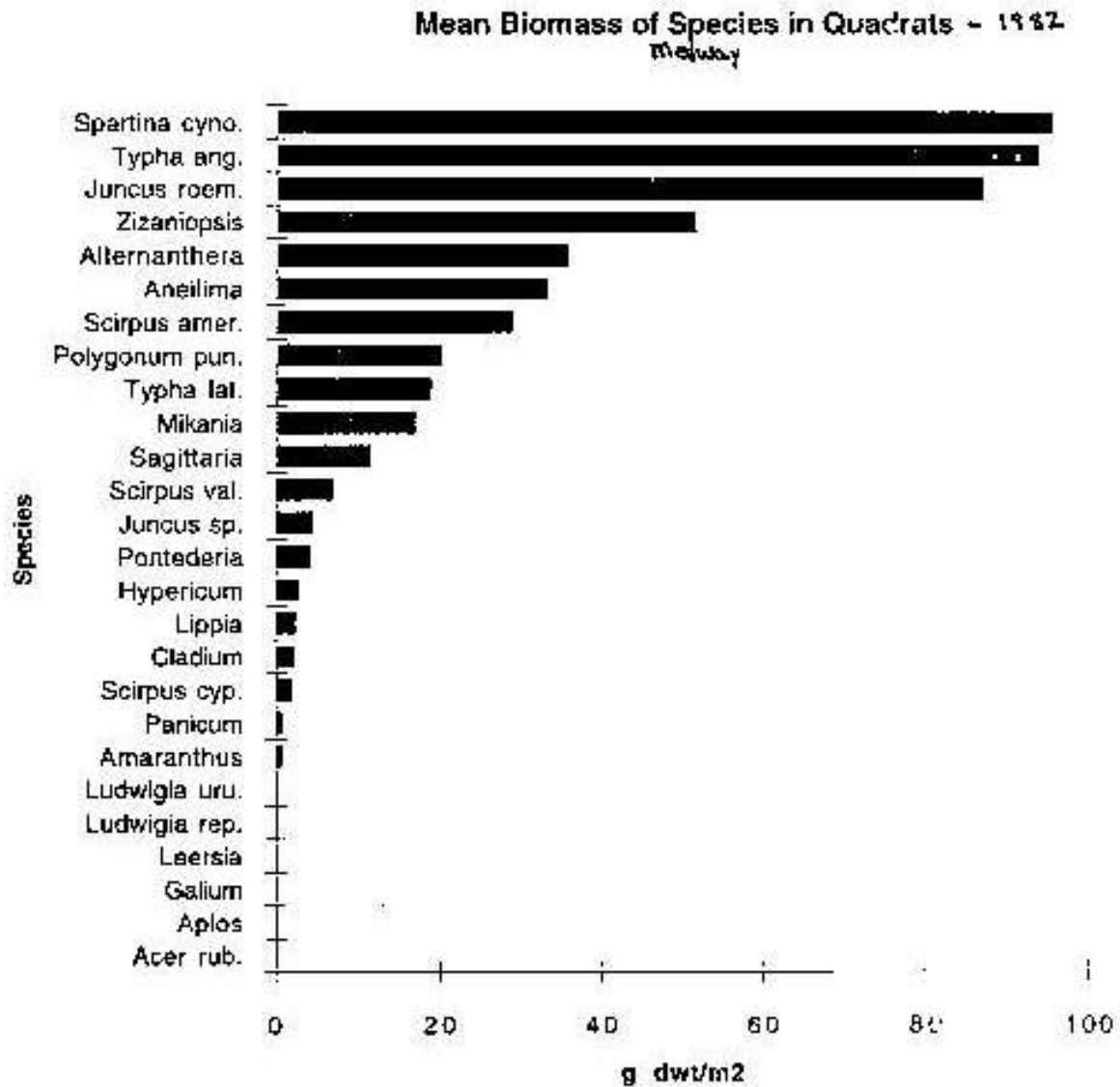
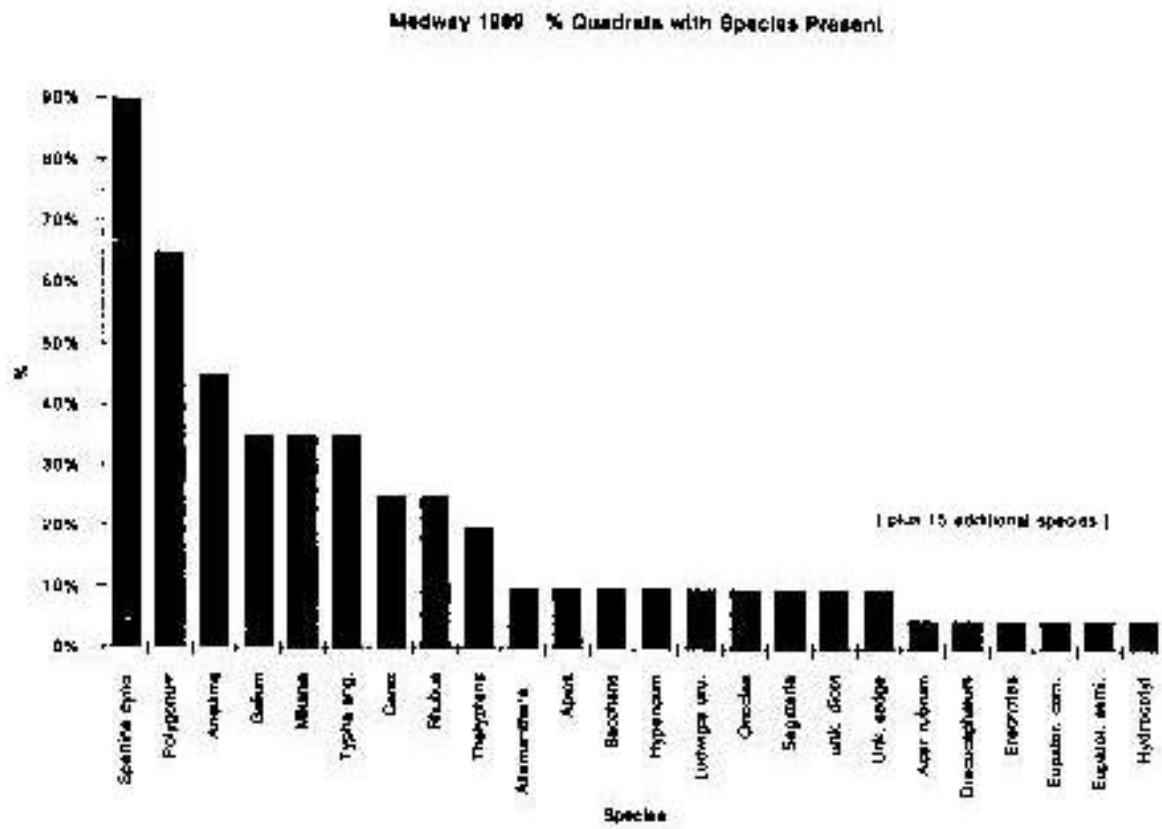


Figure 32

Fig. 33



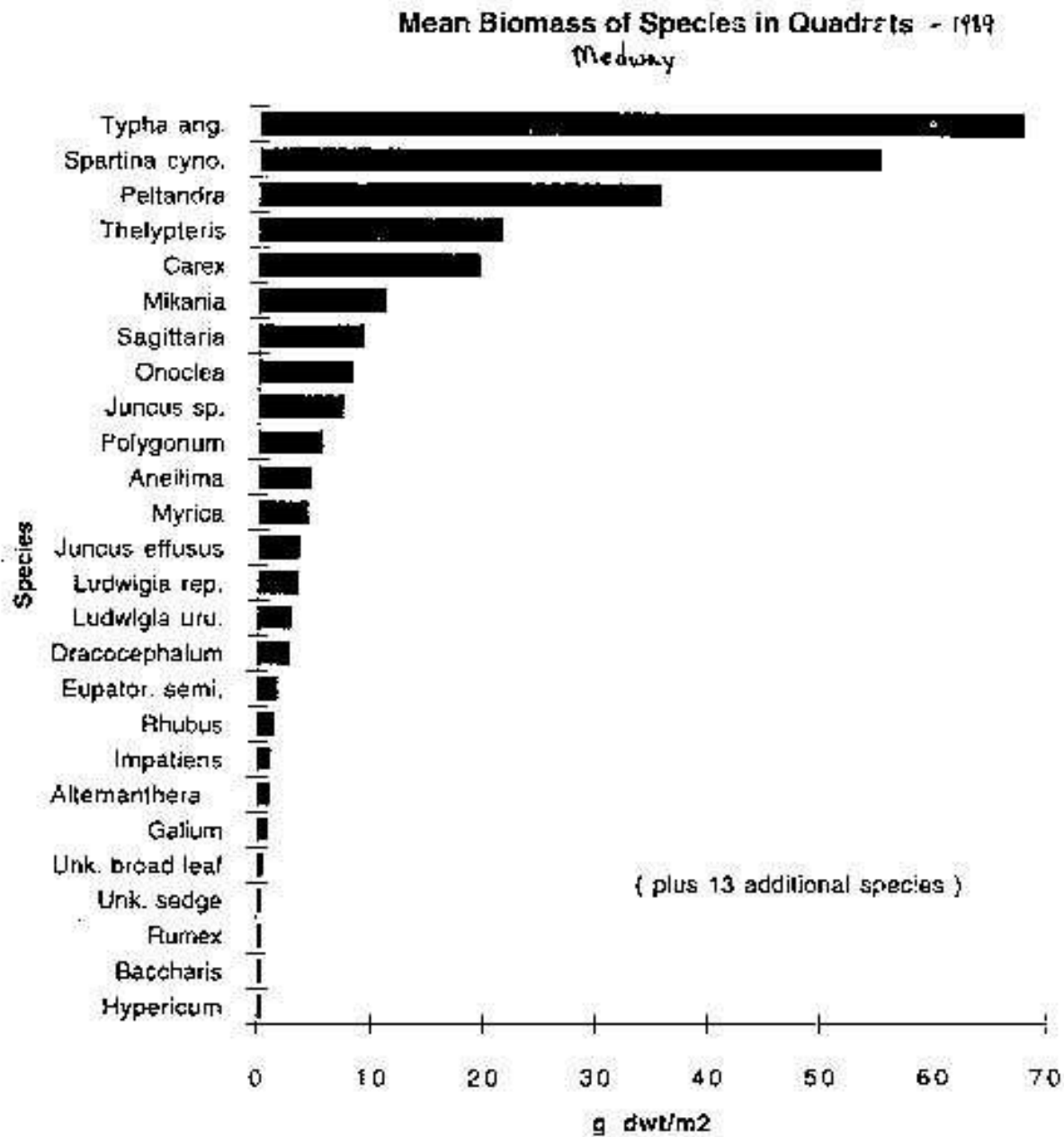
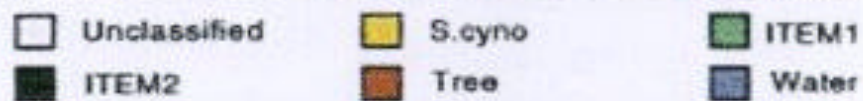


Figure 34

Fig. 35 Medway Winter 1994



Community	Area(m2)	% Cover
ITEM mix	44444	10.2
S. cynosuroides	11879	2.7
Typha/S. cyno.	32227	7.4
Tree	6648	2.0

Figure 36 is a classification from 1994 photography. Photo quality was not good but expansion of tree cover is clear and persistence of the ITEM community continued from the prerediversion classification. In the northeastern corner of the field, *S. cynosuroides* seems to be replacing an almost pure stand of *Typha*. Floating mats now have sizeable trees and complex mixes of associated species. Oblique slide photos show clearly the increasing dominance of trees, still mostly red maple and swamp willow. Species abundance (figs. 37 & 23) is comparable to Dean Hall and Dean Hall#2 but lower than at Quinby. Biomass is concentrated in the top ten species (fig. 37). We know of few better places to look for cottonmouth moccasins.

Fig. 36

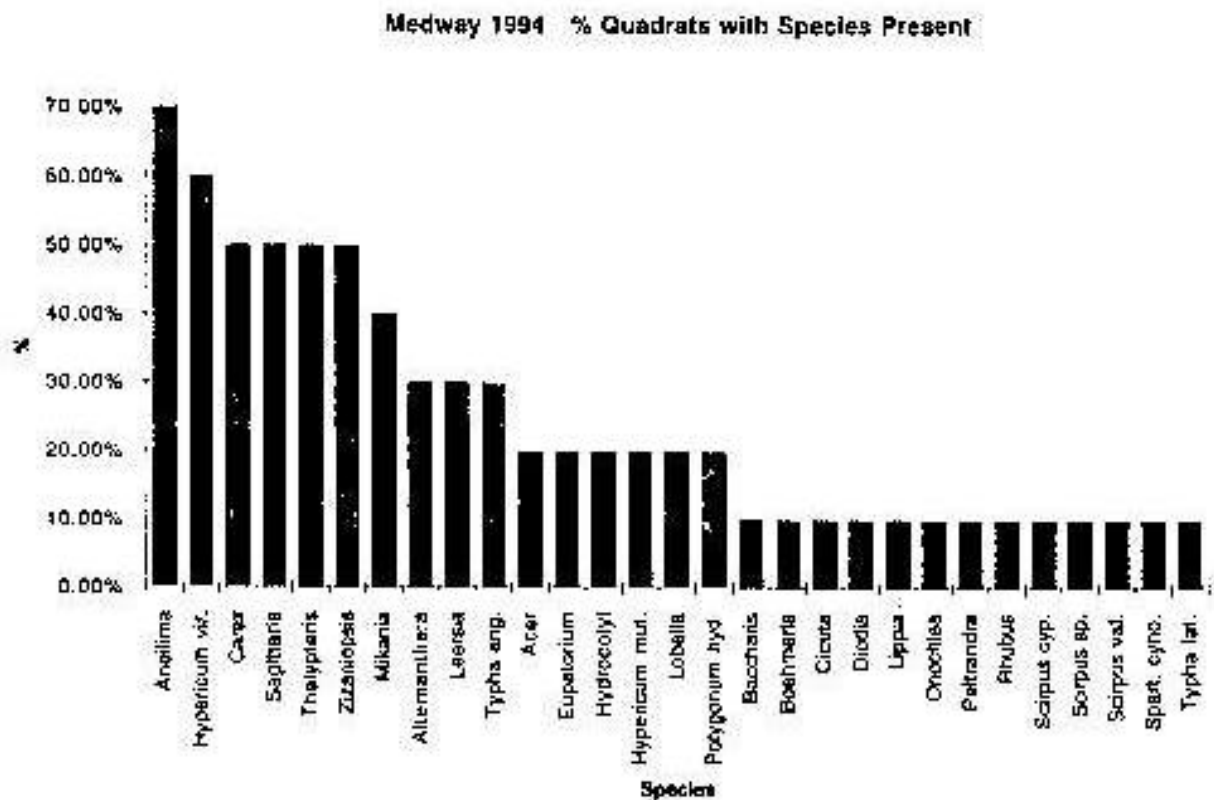


Fig. 37
Medway 1994

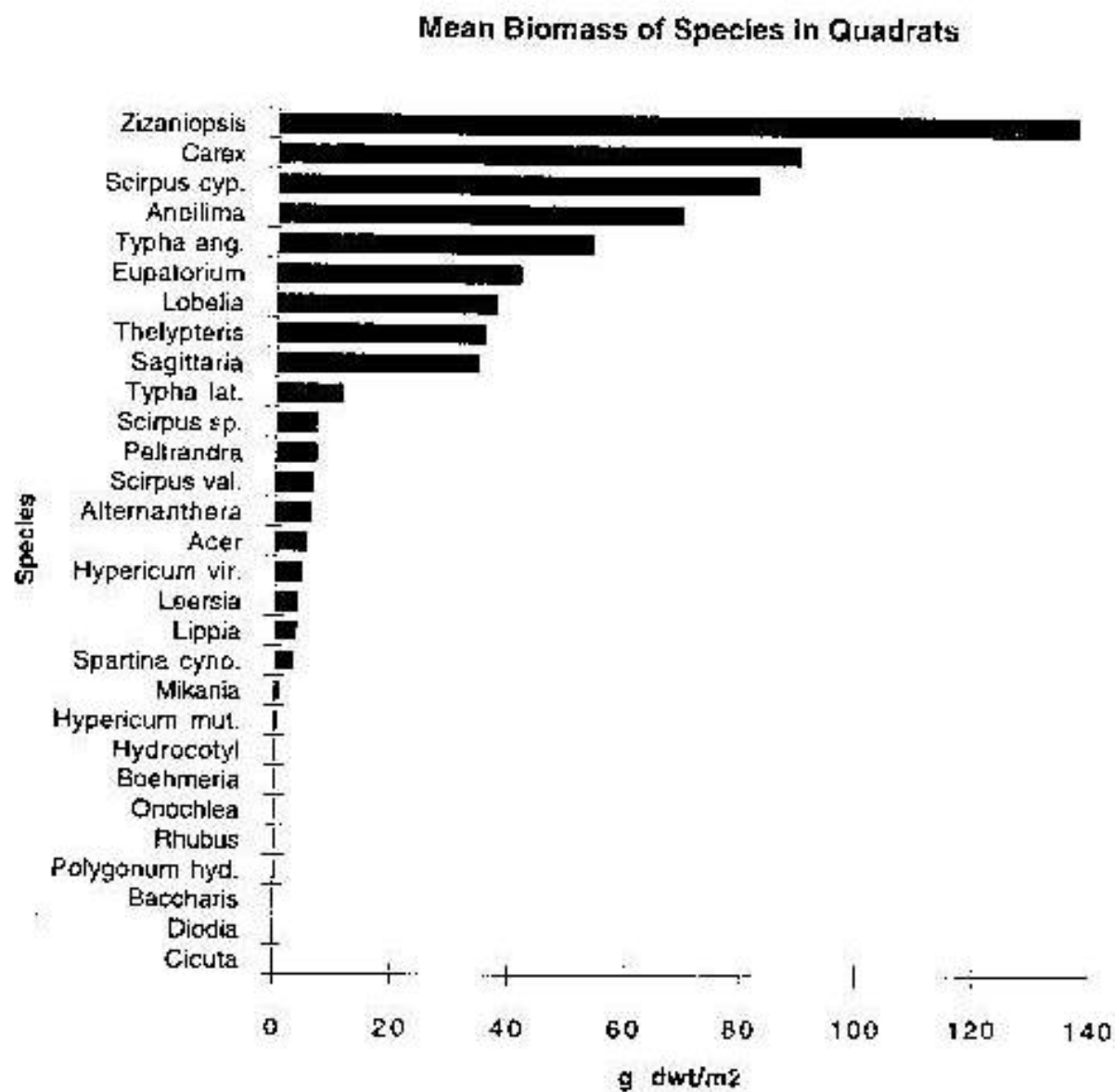


Fig. 38

Proposed Successional Series Cooper River Freshwater Tidal Marsh (former rice fields)

